ENDGATE FOR A PICKUP TRUCK

TECHNICAL FIELD

[0001] This invention relates to endgates for pickup trucks that have a lower portion and an upper portion selectively movable with respect to the lower portion to alter the height of the endgate to facilitate access to a cargo box.

BACKGROUND OF THE INVENTION

[0002] A pickup truck typically employs an endgate at the open end of the cargo box. A prior art endgate is typically a rigid member pivotably connected to the body of the pickup truck for movement between a closed position in which the endgate closes off the open end to retain cargo inside the cargo box, and an open position in which the endgate projects rearward from the pickup truck.

SUMMARY OF THE INVENTION

[0003] An endgate for a pickup truck characterized by a cargo box includes a lower portion partially defining the endgate and an upper portion further defining the endgate. The lower portion is movably mountable with respect to the pickup truck for movement between an open position and a closed position. The upper portion is operatively connected to the lower portion and selectively movable with respect to the lower portion to alter the height of the endgate when the lower portion is in the closed position. The endgate provides increased flexibility in endgate configuration, enabling a user of a pickup truck to reduce the distance the user must reach to access the cargo box.

[0004] In the preferred embodiment, the lower portion is pivotably mountable with respect to the truck, and the upper portion is pivotably connected to the lower portion by at least one gooseneck hinge. A first electric latch on the lower portion is engageable with a striker on the pickup truck to retain the lower portion in the closed

position. A handle on the upper portion selectively causes the first latch to disengage, permitting the lower portion to pivot relative to the cargo box. The first electric latch enables the handle to be located on the upper portion at a conventional handle height without the need for rigid latch rods extending between the lower portion and the upper portion. Similarly, a second electric latch on the lower portion is engageable with at least one striker on the upper portion to prevent relative motion between the lower portion and the upper portion. A switch on the upper portion selectively causes disengagement of the second electric latch from the striker to allow the upper portion to pivot independently of the lower portion. The second electric latch enables the switch to be located on the upper portion without the need for rigid latch rods between the lower portion and the upper portion.

[0005] The above features and advantages, and other features and advantages of the present invention are readily apparent from the following detailed description of the best mode for carrying out the invention when taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIGURE 1 is a schematic perspective view of a pickup truck with an endgate having a lower portion and an upper portion;

[0007] FIGURE 2 is a rear schematic view of the pickup truck of Figure 1;

[0008] FIGURE 3 is a perspective schematic view of the endgate of Figure 1 with the upper portion in a first position with respect to the lower portion;

[0009] FIGURE 4 is a perspective schematic view of the endgate of Figure 1 with the upper portion in a second position with respect to the lower portion;

[0010] FIGURE 5 is a side cross-sectional schematic view of the endgate of Figure 1 in a fully closed position;

[0011] FIGURE 6 is a side cross-sectional schematic view of the endgate of Figure 1 in a fully open position; and

[0012] FIGURE 7 is a side cross-sectional schematic view of the endgate of Figure 1 in a partially open position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] Referring to Figure 1, a pickup truck 10 includes a cab 14 and a cargo box 18. The cargo box 18 defines a cargo area 20, and is at least partially formed by a box floor 22, a front wall 26, and two sidewalls 30. An endgate 34 is pivotably mounted at one end of the cargo box 18. The endgate 34 includes a lower portion 38 and an upper portion 42. Referring to Figure 2, the sidewalls 30 cooperate to at least partially form an endgate opening 44. Hinges 46 at the lower portions of the sidewalls pivotably connect the lower portion 38 to the cargo box 18. A striker 50 on each of the sidewalls 30 engages a latch, depicted at 78A in Figures 3 and 4, in the lower portion 38 to retain the lower portion in a closed position as shown in Figures 1 and 2. The lower portion 38 and the upper portion 42 extend substantially from one sidewall to the other and substantially fill the endgate opening 44 when the endgate 34 is fully closed.

[0014] Referring to Figure 3, wherein like reference numbers refer to like components from Figures 1 and 2, the lower portion 38 of the endgate includes an inner panel 54 and an outer panel 58 defining a cavity 60 therebetween. The upper portion 42 similarly includes an inner panel 62 and an outer panel 66 defining a cavity 68 therebetween. The lower portion 38 and the upper portion 42 each include a structural frame 70, 74 within their respective cavities 60, 68 for supporting hardware and providing structural rigidity. Structural frames 70, 74 are comprised of a plurality of tubular members welded to one another. Those skilled in the art will recognize a variety of structural elements that may be employed within the scope of the claimed invention to provide structural rigidity to the lower portion and the upper portion. For example, one or more stamped reinforcement members welded to the inner panel or the outer panel may be employed instead of tubular members.

[0015] Latches 78A are operatively connected to the structural frame 70 of the lower portion and are sufficiently positioned to engage the strikers 50 on the pickup truck sidewalls. The latches 78A are electronically actuated by solenoids 82 and are operatively connected to a handle 84 on the upper portion by wires (not shown) that extend between the lower portion and the upper portion. The handle 84 is a device that is operable to selectively cause disengagement of latches 78A from strikers 50. A pair of gooseneck hinges 86 operatively interconnects the lower portion 38 and the upper portion 42 such that the upper portion is pivotable with respect to the lower portion. In the embodiment depicted, two hinge brackets 90 are mounted to the structural frame 70 within cavity 60. Each hinge bracket 90 supports a pivot pin 96 about which one of the gooseneck hinges 86 is pivotable on a horizontal pivot axis.

[0016] The upper portion 42 includes strikers 98 engageable with electronically-actuated latches 78B mounted to frame 70 within cavity 60. When the strikers 98 are engaged with the latches 78B, as depicted in Figure 3, the upper portion is not free to pivot with respect to the lower portion; the lower portion and the upper portion are substantially rigidly connected. The upper portion is in a first position with respect to the lower portion such that the endgate extends to a height H. In the context of the present invention, the "height" of the endgate is the vertical distance between pivot axis A, about which the lower portion 38 pivots with respect to the cargo box between the closed position and an open position, and the uppermost extent of the endgate 34 when the lower portion 38 is in the closed position.

[0017] A device, e.g., a push-button switch 102, on the upper portion 42 is operatively connected to latches 78B by wires (not shown) extending between the lower portion and the upper portion to cause selective disengagement of the strikers 98 from the latches 78B. When the strikers 98 and the latches 78B are disengaged from one another, the upper portion is free to pivot independently of the lower portion to a second position perpendicular to the lower portion, as shown in Figure 4. The endgate 34 extends to a height H', which is less than height H. A portion 100 of the surface of

inner panel 62 is preferably substantially flat and oriented horizontally when the upper portion is in the second position in order to provide a horizontal working surface. It may be desirable for the surface portion 100 to be at the same height as the wheel wells in the cargo box when the upper portion is in the second position so that a large load may be supported by the wheel wells and the surface portion 100.

[0018] Referring to Figure 5, wherein like reference numbers refer to like components from Figures 1-4, the endgate 34 is depicted in a fully closed position in which the lower portion and the upper portion are each at least partially located within the endgate opening (not shown). The lower portion 38 is engaged with the strikers (not shown) on the sidewalls of the pickup truck, and the upper portion is in the first position with respect to the lower portion. The portion 100 of the surface of inner panel 62 faces the cargo area 20. The height H of the endgate is sufficient for the endgate to substantially fill the endgate opening to retain cargo in the cargo box. Stop members 104, 108 are mounted to the frame 70 and to the hinge bracket 90, respectively, to interfere with hinge movement so that the second member is limited to a range of motion between the first position and the second position.

[0019] Referring to Figure 6, the endgate 34 is depicted in a fully-open position, in which the lower portion 38 is in an open position and the endgate 34 extends outward so as not to obstruct the endgate opening. The endgate in the fully-open position extends outward from the cargo box a distance D; a user of the pickup truck must reach a distance D to access the cargo box.

[0020] Referring to Figure 7, the endgate 34 is depicted in a partially-open position in which the lower portion 38 is engaged with the strikers (not shown) on the sidewalls (not shown), and the upper portion is in the second position with respect to the lower portion and does not obstruct the endgate opening. The endgate extends outward from the cargo box a distance D', which is less than distance D. Thus, the upper portion is movable with respect to the lower portion to selectively alter the height

of the endgate when the lower portion is in the closed position to improve access to the cargo box.

[0021] While the best mode for carrying out the invention has been described in detail, those familiar with the art to which this invention relates will recognize various alternative designs and embodiments for practicing the invention within the scope of the appended claims.